

## Missouri Department of Natural Resources

# Total Maximum Daily Load Information Sheet

## Rock Creek

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### Waterbody Segment at a Glance:

<b>County:</b>	Jefferson
<b>Nearby Cities:</b>	Kimmswick, Imperial
<b>Length of impairment:</b>	2 miles
<b>Pollutants:</b>	Biochemical Oxygen Demand (BOD) and Ammonia (NH <sub>3</sub> -N)
<b>Source 1:</b>	West Elm-Black Creek Treatment Plant
<b>Source 2:</b>	Seckman Valley WWTP



State map showing location of watershed

**TMDL Priority Ranking:** TMDL approved 1999

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### Description of the Problem

#### Beneficial uses of Rock Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

#### Use that is impaired

- Protection of Warm Water Aquatic Life

#### Standards that apply

- The Missouri Water Quality Standard for dissolved oxygen (related to BOD) in streams is 5.0 milligrams per liter (mg/L) or the natural background oxygen profile of the stream, whichever is less.
- Ammonia (NH<sub>3</sub>-N) standards vary depending on the pH and the temperature. The ammonia limits that apply (at a pH of 7.8) are 1.2 mg/L for summer and 2.0 mg/L during the winter. The tables are found in 10 CSR 20-7.031 Table B.

### Background Information and Water Quality Data

The problems in Rock Creek come from the discharges of two wastewater treatment plants (WWTP), West Elm Place and Imperial Utility Corp, Seckman Valley. West Elm Place actually discharges into Black Creek, an unclassified tributary to Rock Creek. Wastewater that is high in BOD (Biochemical Oxygen Demand) lowers the oxygen in a stream and most aquatic organisms require high levels of oxygen to survive. In addition, ammonia is a common by-product of wastewater treatment and can be

toxic to aquatic life. Due to population increase, these facilities discharge as much or more water than they were designed to handle. Frequent violations of Water Quality Standards for BOD and ammonia have occurred in Rock Creek. These violations occur during dry weather conditions when the effluent (discharged water) dominates the stream flow.

The TMDL was written and approved by the US Environmental Protection Agency on Dec. 1, 1999. The Rock Creek Sewer District has nearly completed construction of sewer lines that will take all wastewater in the area to the regional wastewater treatment plant at Kimmswick. Discharges from the West Elm Place Black Creek wastewater plant, the Seckman Valley wastewater plant and several smaller wastewater plants should be eliminated by September 2004.

### Impaired Segment of Rock Creek in Jefferson County, Missouri, with Location of Sampling Sites and Treatment Plants



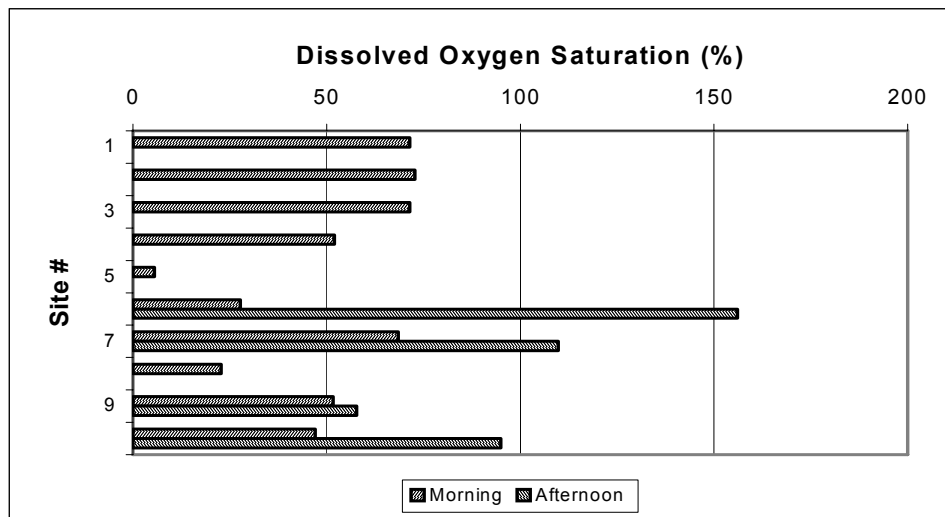
----- Impaired Segment

→ Direction of Flow

#### Site Legend

- 1 – Black Creek just above Black Creek WWTP
- 2 – Black Creek effluent – North outfall
- 3 – Black Creek effluent – South outfall
- 4 – Black Creek 50 yards below Black Creek WWTP
- 5 – Black Creek 0.8 mile below Black Creek WWTP
- 6 – Black Creek near mouth
- 7 – Rock Creek just upstream from Mastadon State Park
- 8 – IUC I-55 wastewater lagoon
- 9 – Rock Creek 0.2 mile below IUC I-55 wastewater lagoon
- 10 – Rock Creek 0.5 mile below confluence with Black Creek

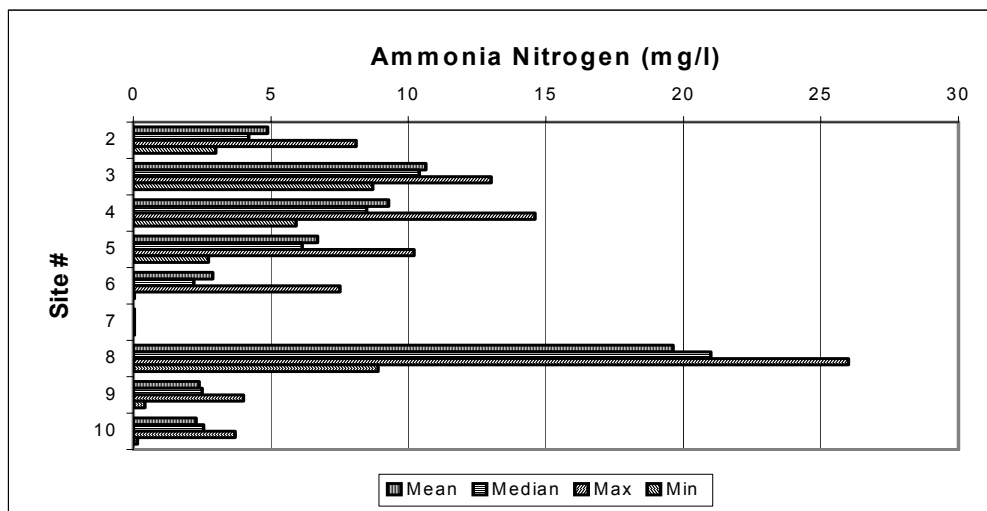
### Average Dissolved Oxygen Saturation at Sample Sites in Rock Creek and Black Creek July and October 1992 and July 1995 for both graphs



Source: Missouri Department of Natural Resources

Note: Afternoon data at sites #1 through #5 and #8 are not available. Dissolved Oxygen Saturation below 80 percent is considered harmful to aquatic life.

### Ammonia Nitrogen Levels at Sample Sites in Rock Creek and Black Creek



Source: Missouri Department of Natural Resources

#### For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-1300 office

(573) 522-9920 fax

Program Home Page: [www.dnr.mo.gov/env/wpp/index.html](http://www.dnr.mo.gov/env/wpp/index.html)